



TUNGROOVE
TUNGALOY



TURNLINE

Tungaloy Report No. 427-US

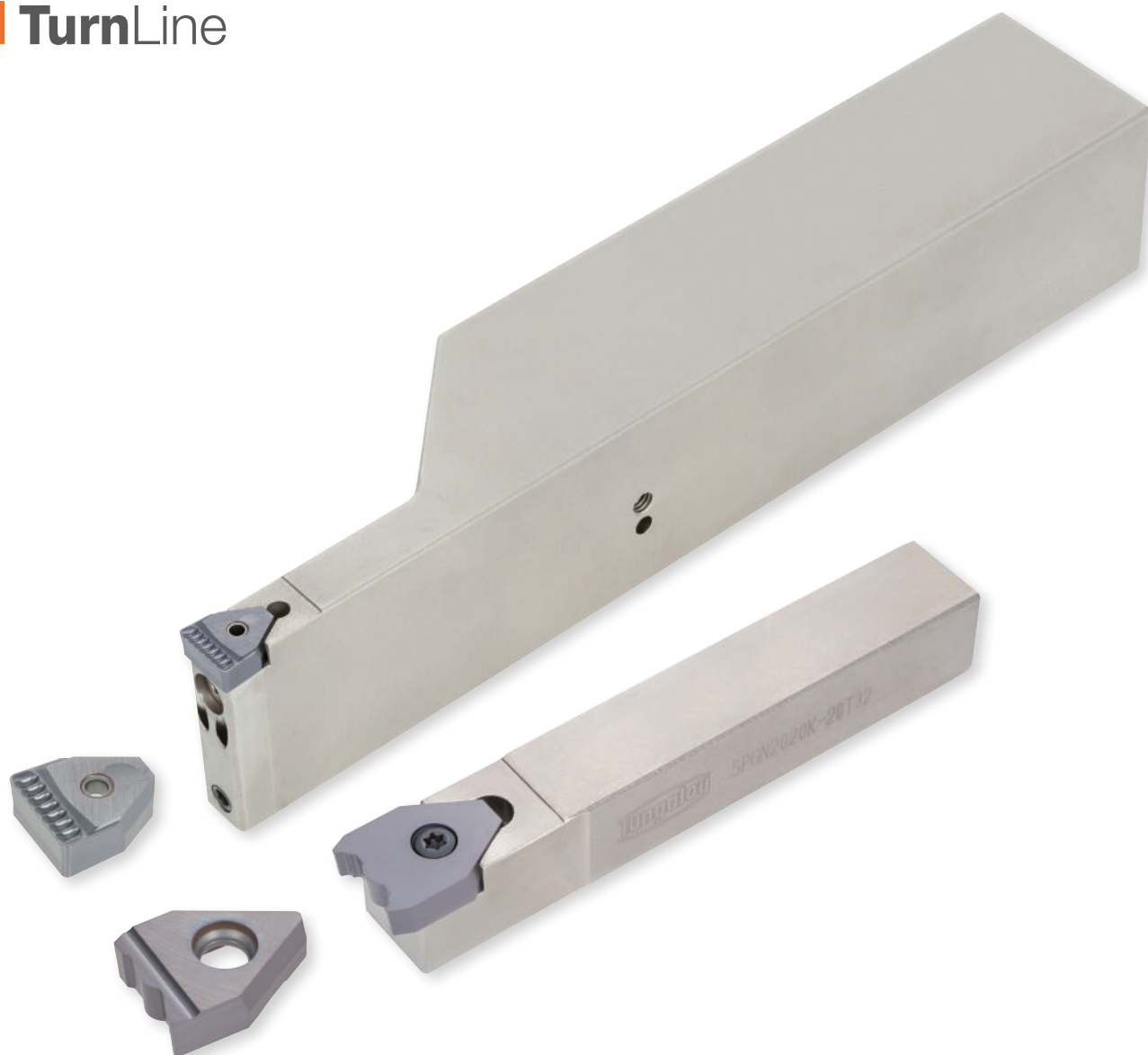
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Effectively **reduces**
machining time!



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 **TurnLine**



TUNGROOVE
TUNGALOY

Unique system for wide grooving
and wide profile grooving

Tungaloy
Member IMC Group

TUNGROOVE

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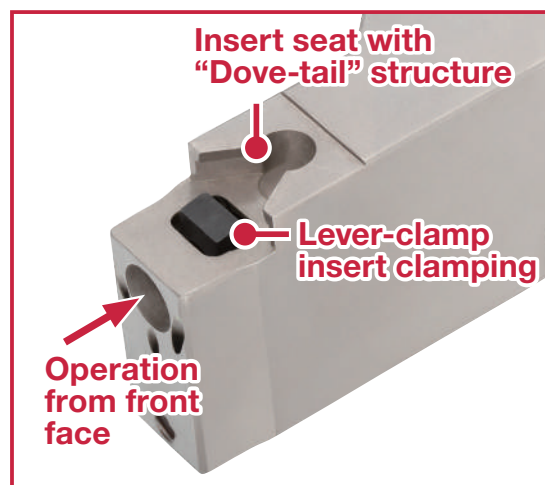
Reduces machining time of wide width grooving and forming!

Effectively reduces the number of passes or machining time of complex profiles!



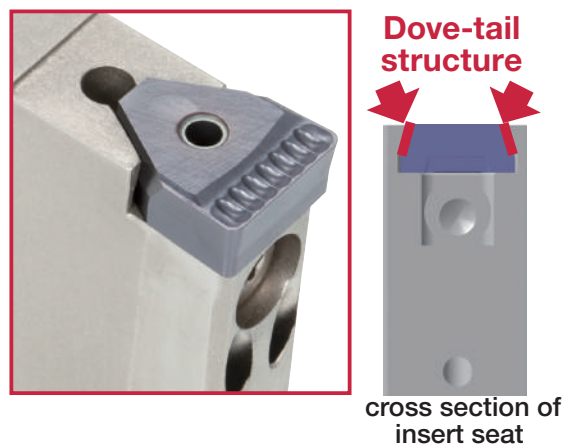
● Easy insert clamp operated from front face

- Indexing can be operated from front face of toolholder, reducing insert changing time and machine downtime.



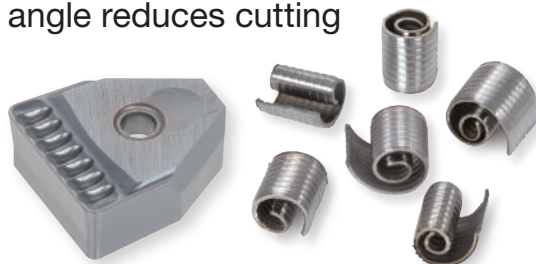
● Highly rigid lever-clamping provides stable grooving

- Dove-tail structure prevents insert movement during wide grooving operations.



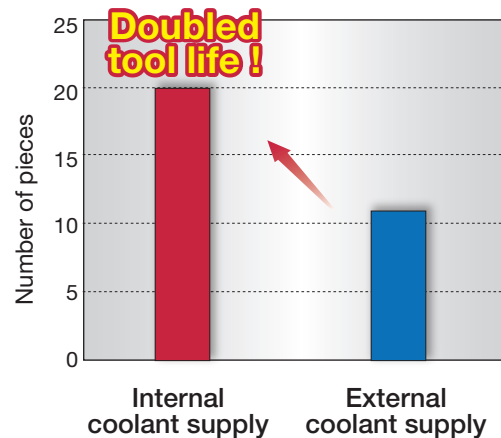
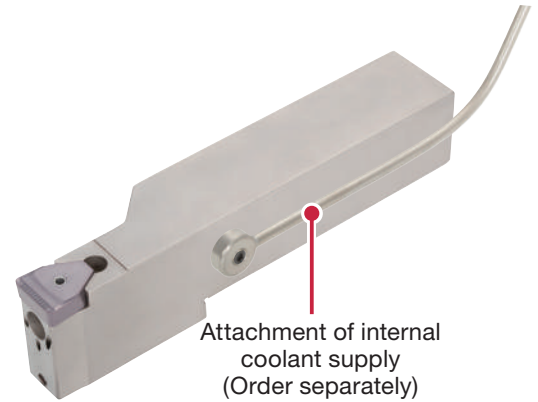
● Open tool design, provides a clear path for chip evacuation

- Excellent chip formation, due to the dimple shape chipbreaker design. Large rake angle reduces cutting forces.



● Internal coolant supply is available (For FPGR type only)

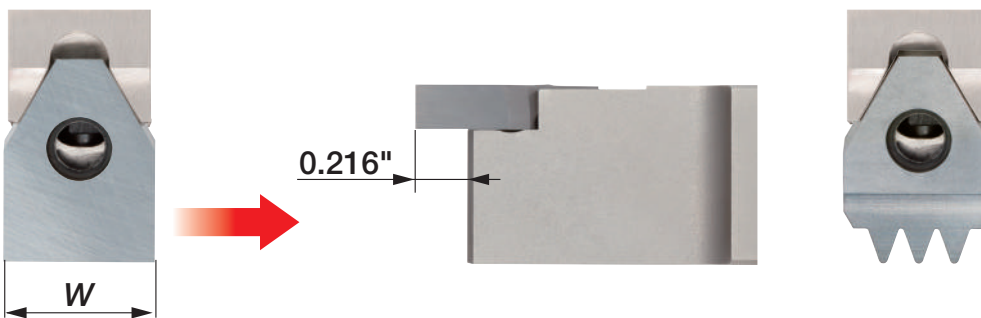
- Internal coolant supply can be added on the FPGR type grooving toolholders. 2 or 3 coolant holes on front face (depending on toolholder size). Coolant is supplied directly to the cutting edge, reducing flank wear as well as improving tool life and chip control.



Insert : PSGM10-08
 Grade : AH725
 Work material : 4130
 Cutting speed : $V_c = 328$ sfm
 Feed : $f = 0.012$ ipr
 Groove depth : $d = 0.787$ "

● Profile grooving inserts and tools

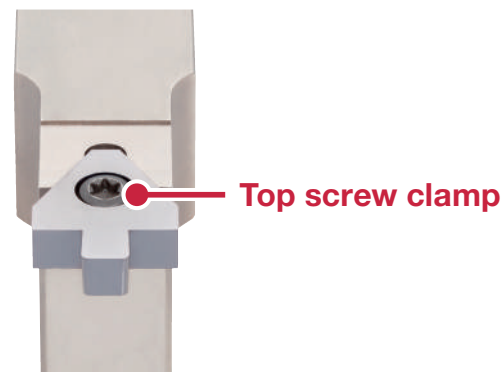
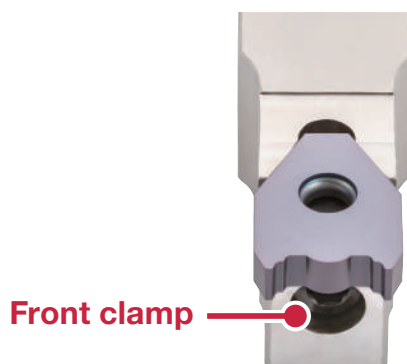
- Inserts are supplied in width (W) 0.394" - 0.984".
- The insert length is extended for profile shapes up to 0.216" depth.



● Two styles of tools are available!

■ Lever lock type

■ Screw on type



● Inserts

■ For wide grooving



	Groove width $W \pm 0.002"$	Cat. No.	Grades		Dimensions (in)		
			Coated		L	s	r_ϵ
			AH725				
	0.394	PSGM10-08	●		0.433	0.157	0.032
	0.590	PSGM15-15	●		0.591	0.197	0.059
	0.787	PSGM20-20	●		0.866	0.256	0.079
	0.984	PSGM25-20	●		0.866	0.256	0.079



■ Blanks for wide profile grooving*

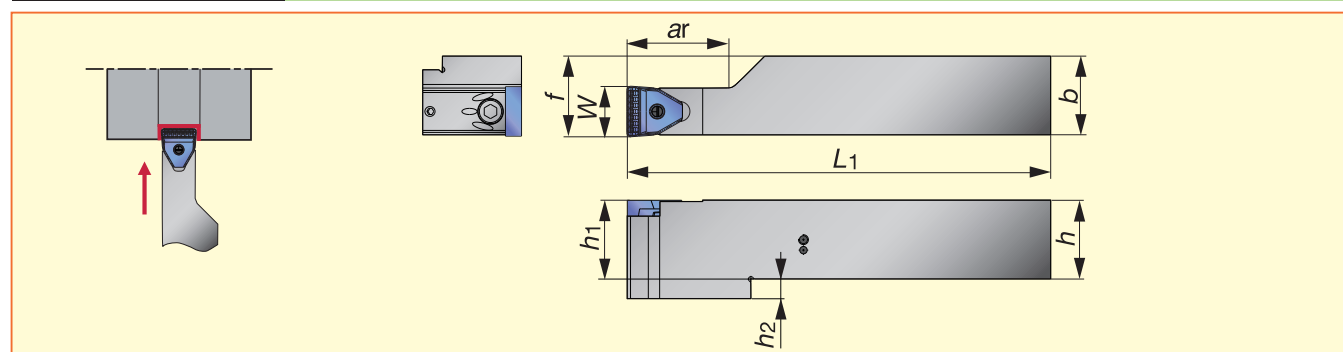
	Groove width $W \pm 0.001"$	Cat. No.	Grades		Dimensions (in)	
			Carbide		L	s
			UX30	TH10		
	0.402	PSGB10	●	●	0.709	0.157
	0.598	PSGB15	●	●	0.787	0.197
	0.795	PSGB20	●	●	1.062	0.256
	0.992	PSGB25	●	●	1.062	0.256

*Stocked products are blanks (semi-finished) for formed inserts

● Toolholders

FPGR

Lever lock type, for external wide grooving



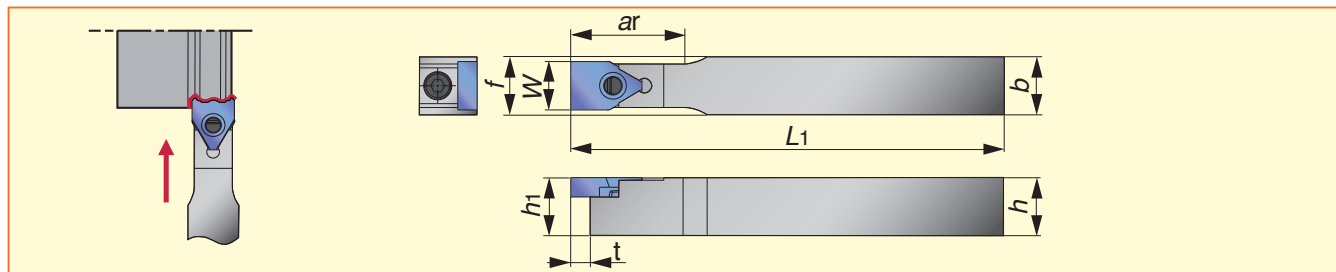
Groove width W (in)	Cat. No.	Stock		Max. groove depth ar (in)	Dimensions (in)						Insert (*)	Clamping screw	Lever	Spring	Wrench
		R	L		h_1	b	h	L_1	f	h_2					
0.394	FPGR16-10T20	●		0.787	1.000	1.000	1.000	7.000	1.020	-	PSG*10	FCS3	FCL4	BP-5	P-2.5
0.394	FPGR20-10T36	●		1.417	1.250	1.250	1.250	8.000	1.270	-	PSG*10	FCS3	FCL4	BP-5	P-2.5
0.590	FPGR16-15T20	●		0.787	1.000	1.000	1.000	7.000	1.020	-	PSG*15	FCS3	FCL4	BP-5	P-2.5
0.590	FPGR20-15T40	●		1.575	1.250	1.250	1.250	8.000	1.270	-	PSG*15	FCS3	FCL4	BP-5	P-2.5
0.787	FPGR20-20T40	●		1.575	1.250	1.250	1.250	8.000	1.270	0.003	PSG*20	FCS6	FCL8	BP-9	P-5
0.787	FPGR24-20T50	●		1.969	1.500	1.500	1.500	10.000	1.520	0.003	PSG*20	FCS6	FCL8	BP-9	P-5
0.984	FPGR20-25T40	●		1.575	1.250	1.250	1.250	8.000	1.270	0.003	PSG*25	FCS6	FCL8	BP-9	P-5
0.984	FPGR24-25T50	●		1.969	1.500	1.500	1.500	10.000	1.520	0.003	PSG*25	FCS6	FCL8	BP-9	P-5

(*) Can be used with both wide grooving and profile grooving inserts

● : Stocked Item

FPGN

Lever lock type, for external wide profile grooving

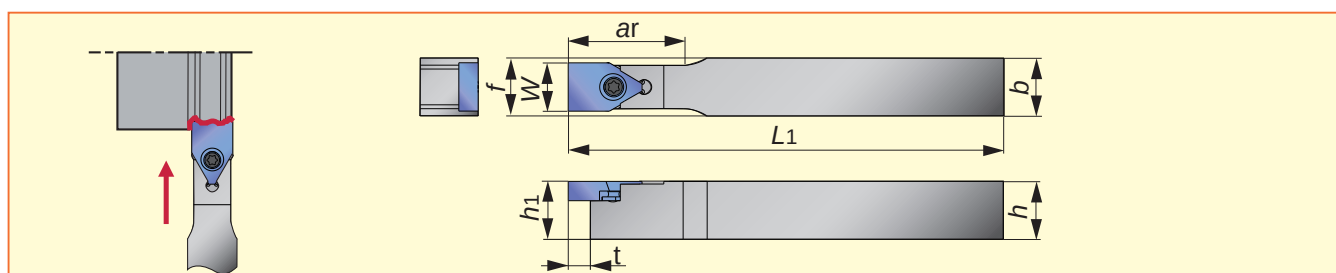


Groove width W (in)	Cat. No.	Stock	Max. groove depth ar (in)	Dimensions (in)						Insert ^(*)	Clamping screw Lever Spring Wrench			
				h ₁	b	h	L ₁	f	t					
0.394	FPGN08-10T20	●	0.790	0.500	0.500	0.500	4.750	0.450	0.196	PSG*10	FCS3	FCL4	BP-5	P-2.5
0.394	FPGN10-10T20	●	0.790	0.625	0.625	0.625	4.750	0.510	0.196	PSG*10	FCS3	FCL4	BP-5	P-2.5
0.394	FPGN12-10T20	●	0.790	0.750	0.750	0.750	5.000	0.570	0.196	PSG*10	FCS3	FCL4	BP-5	P-2.5
0.590	FPGN10-15T25	●	0.980	0.625	0.625	0.625	4.750	0.610	0.196	PSG*15	FCS3	FCL4	BP-5	P-2.5
0.590	FPGN12-15T25	●	0.900	0.750	0.750	0.750	5.000	0.670	0.196	PSG*15	FCS3	FCL4	BP-5	P-2.5
0.787	FPGN12-20T32	●	1.260	0.750	0.750	0.750	5.000	0.770	0.196	PSG*20	FCS6	FCL8	BP-9	P-5
0.787	FPGN16-20T32	●	1.260	1.000	1.000	1.000	6.000	0.890	0.196	PSG*20	FCS6	FCL8	BP-9	P-5
0.984	FPGN16-25T36	●	1.420	1.000	1.000	1.000	6.000	0.990	0.196	PSG*25	FCS6	FCL8	BP-9	P-5

(*) Can be used with both wide grooving and profile grooving inserts

SPGN

Screw on type, for external wide profile grooving

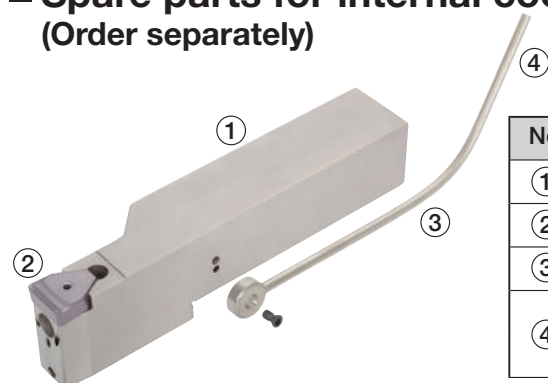


Groove width W (in)	Cat. No.	Stock	Max. groove depth ar (in)	Dimensions (in)						Insert ^(*)	Clamping screw Wrench	
				h ₁	b	h	L ₁	f	t			
0.394	SPGN08-10T20	●	0.790	0.500	0.500	0.500	4.750	0.450	0.196	PSGB10	CSTB-3L081	T-9F
0.394	SPGN10-10T20	●	0.790	0.625	0.625	0.625	4.750	0.510	0.196	PSGB10	CSTB-3L081	T-9F
0.394	SPGN12-10T20	●	0.790	0.750	0.750	0.750	5.000	0.570	0.196	PSGB10	CSTB-3L081	T-9F
0.590	SPGN10-15T25	●	0.980	0.625	0.625	0.625	4.750	0.610	0.196	PSGB15	CSTB-4	T-15F
0.590	SPGN12-15T25	●	0.980	0.750	0.750	0.750	5.000	0.670	0.196	PSGB15	CSTB-4	T-15F
0.787	SPGN12-20T32	●	1.260	0.750	0.750	0.750	5.000	0.770	0.196	PSGB20	CSTB-5	T-20F
0.787	SPGN16-20T32	●	1.260	1.000	1.000	1.000	6.000	0.890	0.196	PSGB20	CSTB-5	T-20F
0.984	SPGN16-25T36	●	1.420	1.000	1.000	1.000	6.000	0.990	0.196	PSGB25	CSTB-5	T-20F

(*) Can be used with profile grooving inserts only

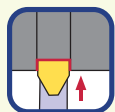
● : Stocked items

■ Spare parts for internal coolant supply attachment (Order separately)



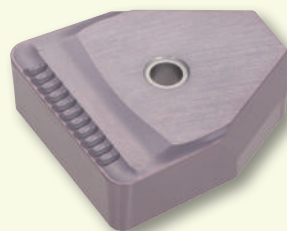
No.	Parts name	Designation	Note
①	Body	FPGR...	-
②	Insert	PSGM...	-
③	Coolant supply attachment	SGCU-341	-
④	Connector	Commercial items can be used	G 1/8 thread NPT 1/8 thread

Grades



Wide grooving insert PSGM type

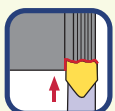
AH725



Recommended grade for grooving.

PVD coated grade featuring an excellent balance of strength and wear resistance.

- The combination of micro grain substrate and flash-coating with high heat resistance provides incredible performance in wide grooving.



Forming insert PSGB type

UX30

Uncoated



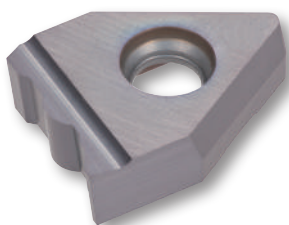
TH10

Uncoated



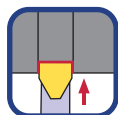
Cemented carbide grade with high fracture resistance.

Carbide grade for general purpose with excellent wear resistance.



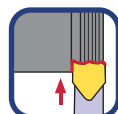
Specially designed profile insert

● Standard cutting conditions



Wide grooving

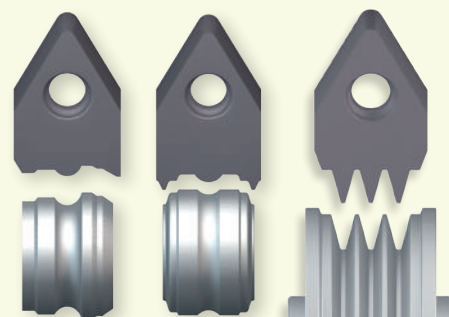
ISO	Workpiece materials	Hardness (HB)	Grade	Cutting speed Vc (sfm)	
	Alloy steels (4140, 4340 etc.)	< 300	AH725	165 - 590	
		< 300	UX30	165 - 390	
PSGM type insert		Groove width: W (in)			
		0.394	0.590	0.787	0.984
Feed: f (ipr)		0.008 - 0.016	0.008 - 0.016	0.012 - 0.020	0.012 - 0.020



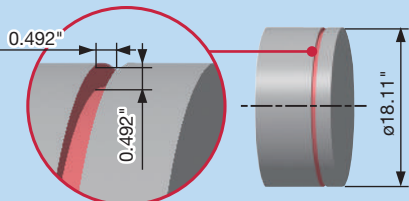
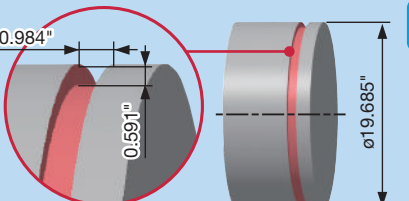
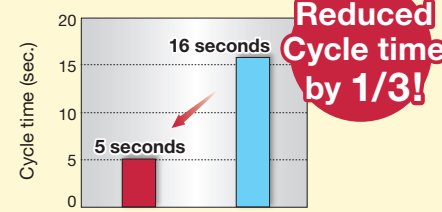
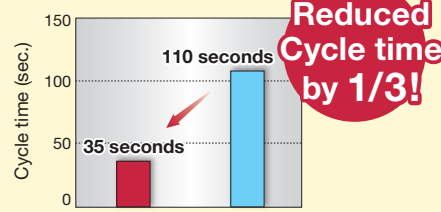
Forming

ISO	Workpiece materials	Hardness (HB)	Grade	Cutting speed Vc (sfm)
P	Steels (1045, 1055 etc.)	< 200	UX30	165 - 490
	Alloy steels (4140, 4340 etc.)	< 300	UX30	165 - 390
M	Stainless steels (303, 304 etc.)	< 200	UX30	165 - 390
K	Gray cast irons (25 etc.)	-	TH10	165 - 490
	Ductile cast irons (64-45-12, 80-55-06 etc.)	-	TH10	165 - 390
N	Aluminum alloy (Si < 12% etc.)	-	TH10	330 - 1640

- Custom shaped inserts can be supplied on customer's request, according to the designated final shape on part drawing.
- Semi-finished blanks PSGB types are offered for purchase.



● Practical examples

Workpiece type		Machine part	Engine part
Toolholder		FPGR20-10T36	FPGR20-10T36
Insert		PSGM10-08 (W = 0.394")	PSGM10-08 (W = 0.394")
Grade		AH725	AH725
Workpiece material		4130	Cast steel
			
Cutting conditions	Cutting speed: Vc (sfm)	360	210
	Feed: f (ipr)	0.012	0.015
	Number of pass for 1 groove	2	3
	Method of machining	Grooving	Grooving
	Coolant	Wet	Wet
Results			
		TUNGROOVE Competitor By using a wider grooving tool, cycle times can be reduced to 1/3. 15 times longer tool life is achieved due to AH725 grade with high wear resistance.	TUNGROOVE Competitor Higher cutting conditions and continuous feeds without pecking cycles, drastically reduce machining times.



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